# DIABETES IN IDAHO

A SUMMARY REPORT: 2002

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### INTRODUCTION

#### Purpose

The purpose of this report is to provide private and public health care professionals with a general summary of the prevalence, effects, costs, care levels, and risk factors associated with diabetes in the State of Idaho. This document supports future efforts to reduce the burden of diabetes in the state. It also provides a means of increasing awareness and improving levels of care, an aid to strategic planning efforts, and a benchmark for future program evaluation activities.

#### Overview of Diabetes

Diabetes mellitus is a group of chronic diseases characterized by hyperglycemia (elevated blood glucose) resulting from defects in insulin secretion, insulin action, or both. People with diabetes are at greater risk for developing other health complications including heart disease, kidney disease, blindness, and lower limb amputations.

### Most diabetes cases fall into two categories:

- Type I, formerly called insulin-dependent diabetes or juvenile-onset diabetes, usually begins
  during childhood or adolescence and requires the use of insulin. About 5% to IO% of diabetes
  cases are type I.
- Type 2, formerly called non-insulin-dependent diabetes or adult-onset diabetes, usually develops in adults who are overweight, physically inactive, or have a family history of diabetes. Prevalence of type 2 diabetes is greater in certain ethnic and racial groups such as Hispanics, Native Americans, African Americans, and Asian-Pacific Islanders. Insulin resistance and relative insulin deficiency characterize type 2. It may be undiagnosed for years because hyperglycemia can develop gradually without noticeable symptoms.

# Idaho Diabetes Prevention and Control Program

The Idaho Diabetes Prevention and Control Program (DPCP) has operated with core funding from The Centers for Disease Control and Prevention (CDC) since 1994. Because the burden of diabetes and the risk of developing the disease are growing statewide, addressing these issues is a public health responsibility. Over the past 10 years, the DPCP has focused first on defining the burdens of diabetes by assessing prevalence and incidence. Second, by moving forward with coordination and implementation of programs and projects which tackle access to care issues, providing professional and public education, promoting health communication messages, and creating synergistic partnerships among provider systems. Healthy People 2010 diabetes objectives serve as the state directive toward reducing the burden of diabetes.

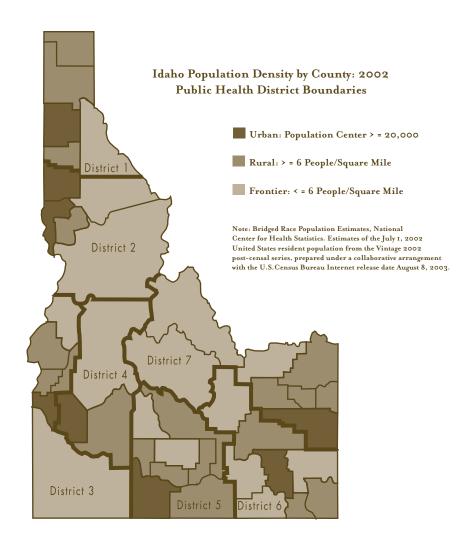
The DPCP contributes to the infrastructure of the seven district health departments and other Idaho Department of Health and Welfare programs. The Diabetes Alliance of Idaho, a statewide coalition of diabetes advisory groups, supports and works with the DPCP to address issues and promote public and professional education. Over the years, the DPCP has placed increasing emphasis on evaluation and surveillance and using the findings to direct the program.

### Geography and Population

- · Idaho ranks 11th in land area among the states with 82,751 square miles. 1
- Idaho is comprised of 44 counties. Eight of these counties are classified as urban by the U.S. Census Bureau meaning that each contains a population center with at least 20,000 people. Twenty counties are deemed to be rural, i.e. contain six or more people per square mile, while I6 counties are classified as frontier with fewer than six people/square mile.<sup>2</sup>
- · Seven public health districts serve Idaho.
- The population of Idaho totals 1.3 million people composed of the following racial groups:2

White	96.4%
Native American/Alaskan Native	1.6%
Asian, Pacific Islander	1.3%
African American	0.7%

Hispanics of any race comprise 8.5% of the state's population.<sup>2</sup>



### HIGHLIGHTS

#### Prevalence

• It is estimated 72,000 adult residents of Idaho have diabetes, but only 56,000 have actually been diagnosed. The disease is especially prevalent among those 65 years of age or older (16.2%).6

Overall, the prevalence of diabetes among Idaho adults has increased 41% since 1994, from 3.6% to 6.1% in 2002.6 The average age of diagnosis of Idaho adults with diabetes is 50.6

#### **Mortality**

Diabetes was the sixth leading cause of death among Idaho residents in 2002.<sup>2</sup> Average annual death
rates due to diabetes were substantially higher among those residents in older age groups, among
Hispanics, and among those races other than white.<sup>2</sup>

#### **Economic Costs**

 The total annual cost of diabetes in Idaho including direct medical expenses and indirect costs such as disability, work loss, and premature mortality is estimated at \$658 million.<sup>5</sup>

#### Health Care

- Many adults in Idaho diagnosed with diabetes are not receiving levels of health care that meet the clinical practice recommendations of the American Diabetes Association (ADA). Areas for achieving improved care include:
- I) Increasing the number of visits to health care professionals,
- 2) Optimizing the frequency that blood glucose levels are self monitored,
- 3) Conducting an HbAIc test every three months,
- 4) Receiving an annual influenza vaccination, and
- 5) Performing foot and eye examinations on a yearly basis.

#### **Risk Factors and Prevention**

- The "profile" of a person most at risk for diabetes:
  - Hispanic or of a race other than white;
  - Has a family member with diabetes;
  - More than 45 years of age;
  - A woman, particularly one who had a baby that weighed more than nine pounds at birth;
  - Overweight; and
  - Does not exercise regularly.
- Diabetes prevention efforts for Idaho residents primarily should be focused on the known, manageable risk factors. Specifically, these are reducing obesity, increasing physical activity and exercise, dietary improvements such as eating more fruits and vegetables, reducing hypertension, and lowering blood cholesterol levels.

# **PREVALENCE**

• Approximately 56,000 people, or 6.1% of Idaho adults, 18 years of age or older, report ever being told by a doctor they have diabetes (excluding gestational diabetes). It is estimated that 72,000 adult residents have the disease, but 16,000 are undiagnosed.

Idaho Adults with Diabetes, 1994 through 2002 BRFSS 10% 8% 6.т 5.46% 4.0 4% 2% 0% 1998 1994 1995 1996 1997 1999 2000 2001 2002 **Adults with Diabetes** 

• The 6.1% prevalence among Idaho adults is somewhat lower than the 6.7% median value for the 50 states, the District of Columbia, and the Commonwealth of Puerto Rico.<sup>7</sup> The prevalence for adults diagnosed with diabetes in the states immediately adjacent to Idaho are:<sup>7</sup>

U.S.	6.3%
Montana	5.5%
Nevada	6.2%
Oregon	6.2%
Utah	4.4%
Washington	5.8%
Wyoming	5.6%

The prevalence of diabetes among Idaho adult males is 6.3% and 5.8% for females.<sup>6</sup> The percentage
of people diagnosed with the disease increases with age, particularly among those older than 54 years
of age.<sup>6</sup>

Age:	
18-24	1.4%
25-34	1.0%
35-44	3.9%
45-54	5.2%
55-64	10.5%
65+	16.2%

# **MORTALITY**

Diabetes was the sixth leading cause of death among Idaho residents in 2002.8

1	umber of Deaths	Crude Death Rates
Idaho Residents: 2002		per 100,000 Population
Total Deaths	9,909	738.9
I. Diseases of the heart	2,530	188.6
2. Malignant neoplasms	2,144	159.9
3. Cerebrovascular diseases	737	55.0
4. Accidents and adverse effects	602	44.9
5. Chronic lower respiratory diseases	600	44.7
6. Diabetes mellitus	321	23.9
7. Alzheimer's disease	316	23.6
8. Pneumonia and influenza	265	19.8
9. Intentional self-harm (Suicide)	203	15.1
10. Chronic liver disease and cirrhos	sis II2	8.4
All Other Causes	2,079	

The average annual age-specific death rate due to diabetes was considerably higher among older aged residents, based on the three-year period from 2000 to 2002.8

Cause of Death Idaho Residents: 2002	Number of Deaths	Average Annual Age-Specific Death Rates per 100,000 Population
Total State	940	23.7
Age:		
<15	I	0.1
15-24	2	0.3
25-34	II	2.1
35-44	23	4.0
45-54	72	13.5
55-64	110	32.2
65-74	197	85.3
75-84	307	193.5
85+	217	379.8

a. The manner of coding the underlying cause of death changed in 1999 from the ninth revision (ICD-9) to the 10th revision of the International Classification of Diseases (ICD-10). The introduction of ICD-10 in all states and the U.S. involved more than simply changing from a numeric classification to an alphanumeric classification. The 10th revision resulted in new titles for causes, shifting terms and titles from one category to another, regroupings of diseases, and modifications of the coding rules. Therefore, 2002 data are not comparable to data prior to 1999 without comparability ratios based on Modified ICD-9 codes.

b. Rates are per 100,000 population.

c. Age-adjusted rates are artificial measures developed to eliminate the bias inherent in differing age compositions, thus allowing comparisons between geographic regions. Idaho age-adjusted rates were calculated using the 2000 U.S. population estimate as the standard population. Age-adjusted rates based on the 1940 U.S. census standard population, which was used prior to 1999.

d. U.S. crude rates are calculated using 2001 population estimates based on the 2000 Census and provided to the National Center for Health Statistics by the U.S. Bureau of the Census. Idaho crude rates are calculated using 2001 population estimates based on the 2000 Census and provided to the National Center for Health Statistics by the U.S. Bureau of the Census. Idaho crude rates are calculated using 2001 population estimates based on the 1940 Census. U.S. 2001 final data are the latest U.S. data available at the time of publication.

• To compare causes of death among populations that have different age distributions, it is best to use age-adjusted rates. Age adjusting allows for direct comparisons without bias due to categorical age differences. Male and female residents of Idaho had similar age-adjusted average annual death rates for diabetes based on the past three years (2000-2002). However, death rates were twice as high for Hispanics when compared to non-Hispanics and for races other than white when compared to whites.<sup>8</sup>

Cause of Death: Diabetes Idaho Residents: 2000-2002	Number of Deaths	Age-Adjusted Average Annual Death Rates per 100,000 Population
Total State	940	25.8
Sex: Male	407	25.2
Female	533	25.7
Race:White	904	25.3
Other Than White	36	64.4
Ethnicity:Non-Hispanic	903	24.8
Hispanic	37	50.6

Among the seven public health districts in Idaho, the age-adjusted average annual death rate for diabetes ranged from a high of 35.5 in District 6 to a low of 17.4 in District 4.8

Cause of Death: Diabetes Idaho Residents: 2000-2002	Number of Deaths	Age-Adjusted Average Annual Death Rates per 100,000 Population
Total State	940	25.8
District I	150	26.2
District 2	92	26.5
District 3	167	29.3
District 4	145	17.4
District 5	103	20.1
District 6	149	35.5
District 7	134	34.9

# **ECONOMIC COSTS**

In 2002, the American Diabetes Association estimated total annual costs attributable to diabetes in the United States were \$132 billion.<sup>4</sup> This amount comprised \$92 billion in direct medical expenditures and \$40 billion in indirect costs (disability, work loss and premature mortality).<sup>5</sup> Based on the reported prevalence levels of diabetes in 2002, it is estimated that the 2002 total annual cost in Idaho was approximately \$658 million, which breaks down as follows.<sup>5</sup>

Estimated Cost of Diabetes in Idaho (2002)<sup>5</sup>

Direct Medical Expenditures \$ 459 million

**Indirect Costs** 

(disability, work loss, premature mortality) \$ 199 million

Total Costs

(Direct and Indirect) \$ 658 million

### HEALTH CARE

Diabetes is a chronic illness that requires continuing medical care and education to prevent acute complications and to reduce the risk of long-term complications.<sup>9</sup>

## Health Care Coverage

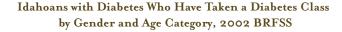
• Most Idaho adults with diabetes reported having health care insurance coverage (86.0%), slightly higher than the 83.2% coverage level for all adult residents. Overall, 45.1% said they saw a health professional at least four times in the past year for their diabetes. Less than one in 10 (8.3%) did not see a health professional for diabetes in the past year.

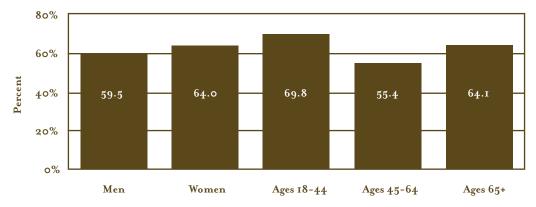
#### **Diabetes Education**

Diabetes Self-Management Education (DSME) is the cornerstone of care for all individuals with diabetes who want to achieve successful health-related outcomes. Participation in a DSME course has been shown to increase the likelihood of people with diabetes receiving recommended standards of preventive care.<sup>9</sup>

#### Healthy People 2010 Guideline

- 5-I. Increase the proportion of people with diabetes who receive formal diabetes education to 60%.
- In 2002, 61.9% of Idaho adults with diabetes had taken a diabetes education class, including 59.5% of men and 64.0% of women.<sup>6</sup>





Ever taken a class on	
self-managing diabetes	
Yes	No
67.8%	36.9%
64.1%	43.1%
91.4%	77.5%
65.4%	56.5%
57.7%	57.6%
	Yes 67.8% 64.1% 91.4% 65.4%

<sup>\*</sup> Indicates statistically significant difference between adults with diabetes who have taken a class and those who have not taken a class.

# Monitoring Blood Glucose

## Self-Blood Glucose Monitoring

Hyperglycemia is the hallmark of all forms of diabetes. Treatment aimed at lowering blood glucose to normal levels has proven to have a number of benefits. These include lowering the risk of developing or slowing the progression of eye, kidney, and nerve problems. Achieving normal glucose levels for most patients requires education, self-management, and intensive treatment programs. Self-blood glucose monitoring (SBGM), especially in insulin treated patients, is a critical component of most treatment programs.<sup>9</sup>

# Healthy People 2010 Guideline

5-I7. Increase the proportion of people with diabetes who perform self-blood glucose monitoring at least once daily to 60%.

ADA Recommendation: Most patients with type I and all those taking insulin should do SBGM three or four times daily. The frequency of SBGM for those with type 2 should be sufficient to facilitate reaching more normal glucose levels.<sup>9</sup>

• Over half of those diagnosed with diabetes (56.1%) reported checking their blood for glucose at least one or more times per day.<sup>6</sup>

Percent of Idaho Adults with Diabetes Who Monitor Blood Glucose Daily, 2002 BRFSS

43·9 56.1 Yes No

IO

### Hemoglobin AIc

Hemoglobin AIc testing can provide a measure of a patient's average glycemia over the preceding two to three months. High Hemoglobin AIc levels (in excess of 7%) have been associated with increased risk of microvascular and neuropathic complications of diabetes.<sup>9</sup>

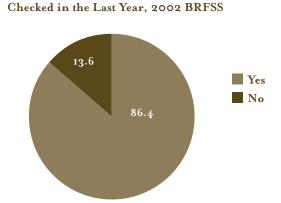
### Healthy People 2010 Guideline

5-I2. Increase the proportion of people with diabetes who have a glycosylated hemoglobin measurement at least once a year to 50%.

**ADA Recommendation:** Perform Hemoglobin AIc test at least two times per year in patients who are meeting treatment goals, and quarterly in patients whose therapy has changed or who are not meeting glycemic controls.<sup>9</sup>

 In 2002, 86.4% of Idaho adults with diabetes had their AIc level checked at least once in the last year.<sup>6</sup>

Percent of Idaho Adults Who Had AIc



#### Vaccinations: Influenza and Pneumonia

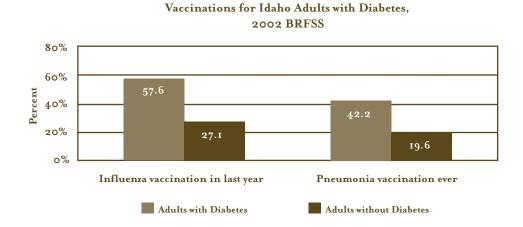
Influenza and pneumococcal immunizations are effective preventive services for people with diabetes. Patients with diabetes may have abnormal immune function and are at high risk for complications, hospitalizations, and death from influenza and pneumococcal disease.

#### Healthy People 2010 Guideline

I4-29. Increase the proportion of adults [with diabetes] who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease.

ADA Recommendation: Consistent with the Advisory Committee on Immunization Practices (ACIP), the influenza vaccine should be recommended for patients with diabetes, age ≥ 6 months, beginning each September. Pneumococcal vaccine should be a one-time revaccination for individuals >64 years of age previously immunized when they were <65 years of age if the vaccine was administered more than five years ago.<sup>9</sup>

- Nearly six of every IO (57.6%) Idaho adults with diabetes reported getting an influenza vaccination in the past year (2002 data).
- Additionally, more than four of every IO (42.2%) adults with diabetes reported ever having had a pneumonia vaccination (2002 data).



### Eye Exams

Diabetic retinopathy is a complication of diabetes that damages the eye's retina and can cause blindness. It affects half of all people diagnosed with diabetes. Diabetes is the leading cause of new cases of blindness among adults 20-74. Nearly all patients with type I diabetes and greater than 60% of patients with type 2 diabetes have retinopathy.

#### Healthy People 2010 Guideline

5-13. Increase the proportion of people with diabetes who have an annual dilated eye exam to 75%.

**ADA Recommendation**: Comprehensive dilated eye and visual examinations should be performed annually by an ophthalmologist or optometrist on all patients age IO years and older who have had diabetes for 3–5 years, all patients diagnosed after age 30, and any patient with visual symptoms and/or abnormalities.<sup>9</sup>

• Approximately six of every 10 (62.0%) Idaho adults with diabetes reported having an eye exam in the past year in which the pupils were dilated.<sup>6</sup>

#### Foot Exams

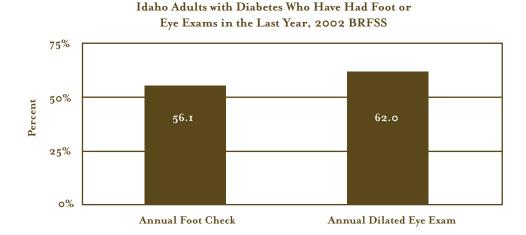
Foot ulcers and amputations are a major cause of morbidity, disability, and expense for people with diabetes. Early recognition and management of risk factors for foot ulcers and amputations can prevent or delay onset of these adverse outcomes. Risk identification is fundamental for effective preventive management of foot problems in people with diabetes.

#### Healthy People 2010 Guideline

5-14. Increase the proportion of people with diabetes who have at least an annual foot examination to 75%.

**ADA Recommendation**: All individuals with diabetes should receive a thorough foot examination at least once a year to identify high-risk foot conditions.<sub>9</sub>

• In 2002, 56.1% of those adults in Idaho diagnosed with diabetes reported they had their feet checked by a health care professional in the last year.<sup>6</sup>



#### Dental Care

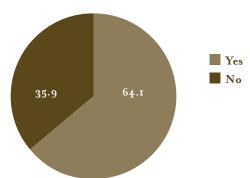
Oral health complications of diabetes include severe periodontitis and subsequent tooth loss, gingivitis, and dental abscesses. Periodontal infection may contribute to hyperglycemia and complicate diabetes control. Routine preventive dental care is an important part of the overall management of health for people with diabetes. <sup>10</sup>

Healthy People 2010 Guideline

5-15. Increase the proportion of people with diabetes who have at least an annual dental examination.

CDC Guidelines: Treatment guidelines from the Centers for Disease Control and Prevention (CDC) recommend that diabetic patients see a dentist at least once every six months.10

 More than six of every 10 (64.1%) Idaho adults with diabetes reported having had a dental visit in the last year.<sup>6</sup>

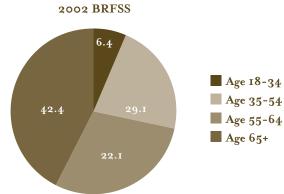


Percent of Idaho Adults with Diabetes Who Had a Dental Visit in the Last Year, 2002 BRFSS

### RISK FACTORS

Individuals with higher risks of developing diabetes include those with a family or gestational history of the disease, people of certain racial or ethnic groups (African Americans, Native Americans, Asians, and Hispanics), older age, obesity or physical inactivity, presence of high blood pressure or high cholesterol. Many of these factors can be managed or better controlled through medication, changes in diet, or lifestyle/behavior modifications.

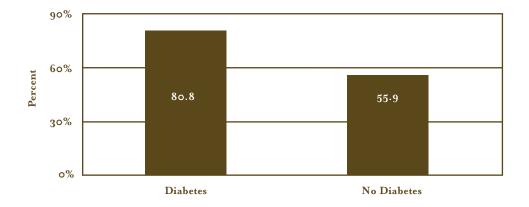
• Among Idaho adults who had ever been told by a doctor they have diabetes, nearly two thirds (64.5%) were 55 years of age or older in 2002.



Percent of Idaho Adults with Diabetes by Age, 2002 BRFSS

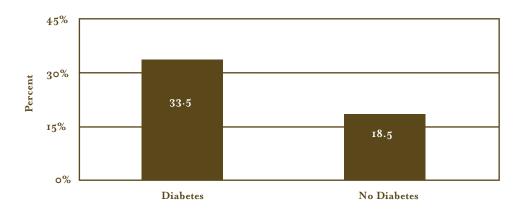
- The average age when the disease was first diagnosed was age 50.6
- Based on self-reported height and weight measurements in 2002, eight of 10 (80.8%) Idaho adults with diabetes were overweight (defined as a body mass index greater than or equal to 25). In contrast, less than six in 10 (55.9%) of those without diabetes were overweight.





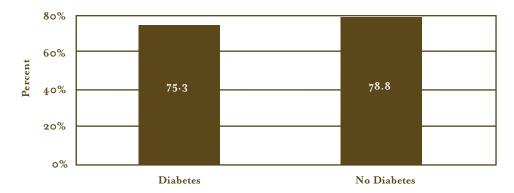
• Approximately one in three (33.5%) Idaho adults with diabetes report they have a sedentary lifestyle, i.e. they did not participate in any physical activities or exercise in the past month. Sedentary lifestyles were reported by less than two in 10 (18.5%) of those without diabetes.<sup>6</sup>

Idaho Adults with Sedentary Lifestyles, 2002 BRFSS



 A majority (75.3%) of Idaho adults with diabetes did not consume the recommended five servings of fruits and vegetables per day. An even higher proportion (78.8%) of adults without diabetes reported not eating the recommended number of servings.<sup>6</sup>

Idaho Adults Consuming Fewer Than Five Servings of Fruits and Vegetables Per Day, 2002 BRFSS



- Idaho adults with diabetes (43.0%) were far more likely than adults without diabetes (II.5%) to report their general health status as fair to poor.<sup>6</sup>
- · Idaho adults with diabetes were less likely to smoke (15.1%) than adults without diabetes (21.0%).6

Health Status and Smoking of Idaho Adults,
2002 BRFSS

45%

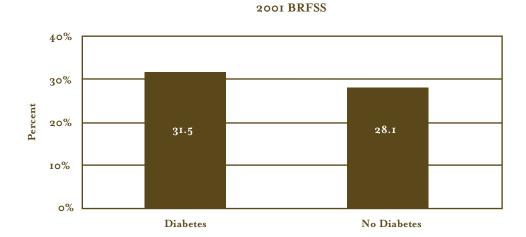
45%

45%

43.0 II.5 I5.1 21.0

General Health Fair/Poor Smoke

• Idaho adults with diabetes (31.5%) were more likely to have been diagnosed with depression than adults without diabetes (28.1%). $^{\text{II}}$ 



Diagnosed Depression Among Idaho Adults,

### SOURCES AND NOTES

- I U.S. Bureau of the Census, Statistical Abstract of the United States, 1998.
- 2 Idaho Vital Statistics 2002, Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare.
- Estimates of diagnosed and undiagnosed DM are calculated based on national population estimates from the National Diabetes Fact Sheet, November 2003, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, in conjunction with Idaho BRFSS estimates of adults diagnosed with diabetes.
- 4 National DM cost estimates are reported from the National Diabetes Fact Sheet, November 2003, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services.
- Idaho cost estimates of DM are calculated using national cost estimates from the National Diabetes Fact Sheet, November 2003, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services.
- 6 Idaho Behavioral Risk Factor Surveillance System (BRFSS), 2002 Survey Data, Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare, 2003.
- 7 Behavioral Surveillance Branch, Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 2002.
- 8 Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare, 2002.
- 9 American Diabetes Association, Clinical Practice Recommendations, Diabetes Care Volume 27, Supplement 1, 2004.
- 10 Diabetes Care, Volume 23, No. 10, October 2000.
- II Idaho Behavioral Risk Factor Surveillance System (BRFSS), unpublished 2001 Survey Data, Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare, 2003.

### RESOURCES

#### Idaho Diabetes Prevention and Control Program (IDPCP)

208-334-4928 · www.idahohealth.org · hartmanm@idhw.state.id.us

#### National Diabetes Education Program

I-800-438-5383 · www.ndep.nih.gov

#### American Diabetes Association

I-800-342-2383 · www.diabetes.org



